Appl. No. 09/998,513
Amdt. dated July 26, 2004
Reply to Office action of May 7, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.   (Currently Amended) A method of backing up and recovering a file, comprising:

   (a)   making a change to an original version of a file thereby creating a new version of the file;

   (b)   saving said new version;

   (c)   computing a transformation operator which is indicative of the differences between the original version of the file and the new version; and

   (d)   saving said transformation operator;

   (e)   deleting said original version of the file; and

   (f)   using the transformation operator to recover the original version of the file.

2.   (Original) The method of claim 1 wherein (d) includes saving said transformation operator in a separate file.

3.   (Original) The method of claim 2 wherein said separate file containing said transformation operator is stored on a storage medium that also contains said new file version.   .

4.   (Original) The method of claim 3 wherein said storage medium comprises a RAID storage subsystem.

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5.   (Original) The method of claim 1 wherein said transformation operator includes a difference value, said difference value being the difference between a numerical value in the original file version and a numerical value in the new file version.

6.   (Original) The method of claim 1 wherein said transformation operator includes words or binary encoded values that have been deleted from the original file version to produce the new file version.

7.   (Original) The method of claim 6 wherein said transformation operator also includes words or binary encoded values that are present in the new file version but are not present in the original file version.

8.   (Original) The method of claim 1 further including making a further change to said new file version to create a second new file version, saving said second new file version, computing a second transformation operator which is indicative of the differences between the new file version and the second new file version, and saving said second transformation operator.

9.   (Original) The method of claim 1 further including making a further change to said new file version to create a second new file version, saving said second new file version, computing a second transformation operator which is indicative of the differences between the original file version and the second new file version, and saving said second transformation operator.

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10.   (Currently Amended) A method of recovering an original version of a file that has been overwritten by a new version of the file, comprising:

    (a)   retrieving a transformation operator which is indicative of the differences between the original version of the file and the new file version; and

    (b)   applying said transformation operator to the new file version <u>in order to generate the original version.</u>

11.   (Original) The method of claim 10 wherein said transformation operator is stored in a separate file.

12.   (Original) The method of claim 11 wherein said separate file containing said transformation operator is stored on a storage medium that also contains said new file version.

13.   (Original) The method of claim 12 wherein said storage medium comprises a RAID storage subsystem.

14.   (Original) The method of claim 10 wherein said transformation operator includes a difference value, said difference value being the difference between a numerical value in the original file version and a numerical value in the new file version.

15.   (Original) The method of claim 10 wherein said transformation operator includes words or binary encoded values that have been deleted from the original file version to produce the new file version.

16.   (Original) The method of claim 15 wherein said transformation operator also includes words or binary encoded values that are present in the new file version but are not present in the original file version.

17.   (Currently Amended) A computer system, comprising:

a processor;

an input device coupled to said processor; and

a non-volatile a storage device coupled to said processor, said storage device containing files and containing a transformation operator which is indicative of the differences between a first version of a file and a second or newer version of the file; and

the processor applies the transformation operator to the second version in order to recover the first version if the first version has been deleted or overwritten by the second version.

18.   (Original) The computer system of claim 17 wherein said transformation operator is stored in a file that is separate from the file containing the second version.

19.   (Original) The computer system of claim 17 wherein said storage device comprises a RAID storage subsystem.

20.   (Original) The computer system of claim 17 wherein said transformation operator includes a difference value, said difference value being the difference between a numerical value in the first file version and a numerical value in the second file version.

21.   (Original) The computer system of claim 17 wherein said transformation operator includes words or binary encoded values that have been deleted from the first file version to produce the second file version.

22.   (Original) The computer system of claim 21 wherein said transformation operator also includes words or binary encoded values that are present in the first file version but are not present in the second file version.

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23.   (Original) The computer system of claim 17 wherein said second file version has been changed further into a third file version, and said storage device also contains a second transformation operator which is indicative of the differences between the second file version and the third file version.

24.   (Original) The computer system of claim 17 wherein said second file version has been changed further into a third file version, and said storage device also contains a second transformation operator which is indicative of the differences between the first file version and the third file version.

25.   (Currently Amended) A computer system, comprising:

a processor; ~~and~~

a non-volatile ~~a~~ storage device coupled to said processor, said storage device containing files, one of said files being a third version and having two prior sequential versions, the earliest version being a first version and a latter version being a second version, and said storage device contains a first transformation operator which is indicative of the differences between the first version and the third version and said storage device contains a second transformation operator which is indicative of the differences between the second version and the third version; and

the processor applies the second transformation operator to the third version in order to recover the older second version of the file in case it ~~is~~ has been deleted or overwritten.

26.   (Original) The computer system of claim 25 wherein said storage device comprises a RAID storage subsystem.

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27.   (Original) The computer system of claim 25 wherein said transformation operators Include a difference value, said difference value being the difference between a numerical value in one file version and a numerical value in another file version.

28.   (Original) The computer system of claim 25 wherein said transformation operators include words or binary encoded values that have been deleted from one file version to produce another file version.

29.   (Original) The computer system of claim 28 wherein said transformation operators also include words or binary encoded values that are present in one file version but are not present in another file version.